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INSECT LOSSES ON CUT-OVER AREAS, STANISLAUS NATIONAL FOREST

STATUS OF INSECT ACTIVITY ON M.C. PLOTS FROM 1939 TO 1941

M.C. Plots 9, 10, and 11 are located on the Stanislaus National Forest near Strawberry Lake in Section 28, T 4 N, R 18 E. They were set up in 1929 by the California Forest and Range Experiment Station as a part of a silvicultural study program on cut-over areas. Each plot is 10 acres in size. They were logged according to 3 systems of marking practice, following a detailed record of the stand and its condition during 1929 before logging. Plot 9 was logged according to the Forest Service system of marking, plot 10 according to the Mason system of light selective logging, and plot 11 according to private company practice of clear cutting. As a result of the light marking on plot 10 a fairly heavy stand of old and decadent white firs was left, while on the other two plots the residual stand contained very few decadent trees.

As a part of a cooperative arrangement with the California Forest and Range Experiment Station, the Berkeley Forest Insect Laboratory made a detailed study of insect losses on the plots in 1929 before they were logged by the Pickering Lumber Company. Annual records and notes of insect kill in white fir, sugar pine, and ponderosa pine were continued until 1932. This information was compiled in a report by Miller1/ and two memoranda by Struble2/.

These plots were again examined for insect activity during October 1941, following a noticeable increase in the number of fading trees over the preceding years. The examination revealed considerable damage to white fir and to sugar pine by 4 species of insects. The fir engraver beetle, Scolytus ventralis, was found active in white fir where this insect alone or in combination with the Sierra fir borer, Tetropium abietis, was responsible for dying and dead firs. The mountain pine beetle, Dendroctonus monticolae, was found responsible for nearly all of the damage to sugar pine, while a small amount was attributable to the flathead, Melanophila gentilis.

Following is a detailed tabulation of losses by tree species for the period from 1939 to 1941, as determined by this examination on the 3 10-acre plots.

1/ Miller, J. M. 1930. Forest insect data, M.C. Plots 9, 10 and 11, Stanislaus National Forest, Season of 1929.

2/ Struble, G. R. Insect losses on M.C. Plots 9, 10 and 11, before and since logging. January 1932.
Summary of insect losses on M.C. Plots 9, 10 and 11. October 1932.

INSECT KILLED SUGAR PINE

Plot No.	1939 Trees	1939 Volume	1940 Trees	1940 Volume	1941 Trees	1941 Volume
			Merchantable			
9	0	0	2	971	3	2,831
11	0	0	0	0	1	266
			Poles			
11	0		1		2	

INSECT KILLED WHITE FIR

Plot No.	1939 Trees	1939 Volume	1940 Trees	1940 Volume	1941 Trees	1941 Volume
			Merchantable			
9	1	167	6	2,295	0	0
10	1	3,396	1	1,306	1	4,198
11	1	4,100	4	4,591	0	0
			Poles			
9	0		1		0	
11	1		4		1	

PLOT NUMBERS OF INSECT KILLED TREES

Plot 9: Sugar pine - 6, 122, 315, 317, 371.
White fir - 40, 51, 95, 121, 218, 249, 320, 432, 579.

Plot 10: White fir - 17, 501, 567.

Plot 11: Sugar pine - 177, 178, 959, 1249.
White fir - 146, 193, 382, 393, 505, 722, 790, 818, 1073, 1107.

CLASSES OF TREES SELECTED (DUNNING'S)

Class	Plot 9	Plot 10	Plot 11
	Sugar Pine		
1	2	0	0
2	1	0	3
3	2	0	0
6	0	0	4
	White Fir		
1	5	0	1
2	4	0	3
5	0	3	1
6	0	0	4

The insect loss for 1941 is presumably incomplete. Normally trees attacked late in the season do not fade until along in the winter or early spring, and there is little possibility of spotting them earlier. This is particularly true of the firs infested by Scolytus or Tetropium.

Detailed examinations on 2 infested fir trees indicated a condition similar to that when destructive outbreaks of the fir engraver beetle occurred in 1929, as judged by the heaviness of brood and apparent lack of resistance of the trees to attacks. Fourteen of the 22 firs noted in this examination were killed by this insect, while the others contained the Sierra fir borer in combination with it.

A comparison of fir losses on the 3 plots shows a larger number of fir trees killed on plots 9 and 11 even though many more decadent trees were left on plot 10. This indicates that the fir engraver beetle is aggressive and, in addition, that it shows no degree of selection for weakened trees. From the standpoint of volume the fir losses for the 3-year period were as heavy on plot 10 as on plot 11, owing to the selection of large trees, whereas on plot 9 the total volume loss was considerably less.

The activity of the mountain pine beetle, particularly on plot 9, and to a lesser extent on plot 11, is a serious threat to sugar pine seed trees. All trees killed were vigorous type in Dunning's classes 1, 2, and 3 with the exception of one class 6 tree on plot 11. In addition, on plot 11 there were 3 sugar pine poles. Growing conditions on the ground with the exception of one tree were without disturbance. No evidence of mechanical injury or other previous injury of disease was evident, indicating that even though vigorous in appearance, the sugar pines in the cut-over reserve stands here are without

appreciable resistance to insect attacks. This same condition was evident outside in cut-over reserve stands to the south and north of the plots.

Losses due to insects in white fir and sugar pine may reach a record in the number of trees killed for any single year since 1929 by the time all of the 1941 kill is accounted for. This is surprising not only because the growing site is excellent, but also because climatic conditions for the past several years should have proven a distinct advantage toward building up of resistance of the stand against attacks by insects.

Respectfully submitted,

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Berkeley, California
October 13, 1941